Small Business Innovation Research/Small Business Tech Transfer

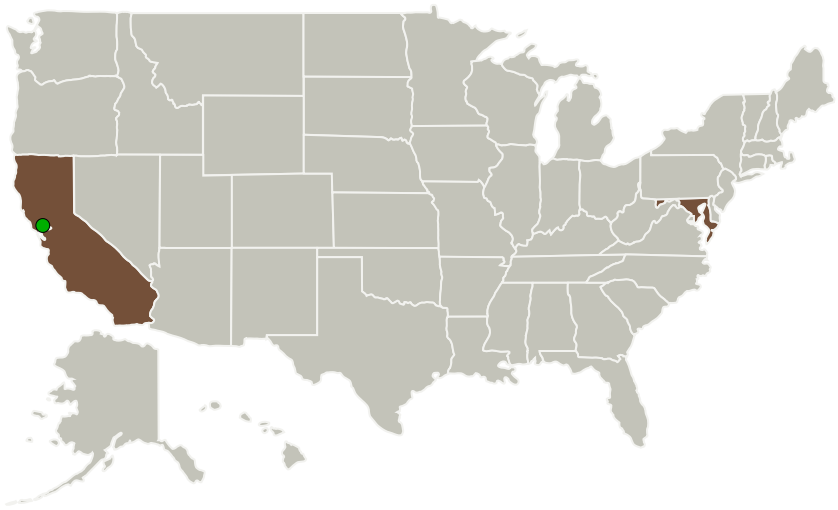
A Flexible Fault Management Architecture for Cluster Flight, Phase I

Completed Technology Project (2013 - 2013)

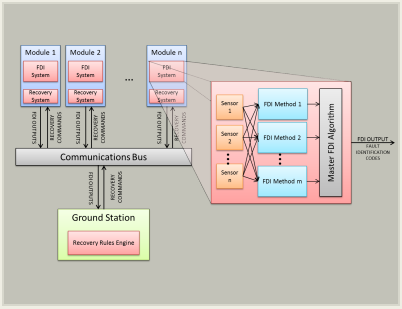
Project Introduction

Emergent Space Technologies proposes to develop a flexible, service-oriented Fault Management (FM) architecture for cluster fight missions. This FM architecture will include algorithms to be run on each cluster module for fault detection, isolation, and recovery, software to be used at a ground station to direct recovery actions, and protocols for communication of fault information between cluster modules and between modules and the ground station. Individual components of the architecture will be designed so that they do not work together directly, but interact through predetermined interfaces. This will allow for flexibility, scalability and robustness. During Phase 1 of the proposed research, the focus of the research will be a fault detection and isolation system to be incorporated into the FM architecture.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Emergent Space Technologies, Inc.	Lead Organization	Industry	Greenbelt, Maryland
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California



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Primary U.S. Work Locations	
California	Maryland

Project Transitions

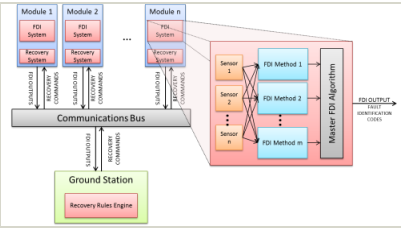
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140466)*

Images



Project Image
A Flexible Fault Management Architecture for Cluster Flight
(https://techport.nasa.gov/image/132901)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Emergent Space Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Matthew C Ruschmann

Co-Investigator:

Matthew Ruschmann

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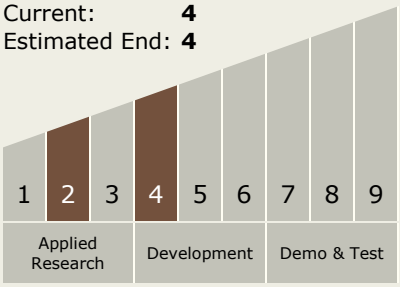
Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.5 GN&C Systems Engineering Technologies
    - TX17.5.2 GN&C Fault Management / Fault Tolerance / Autonomy

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System